

APPENDIX C EMS AUDIT MATRIX

Lead Auditor: _____

Date: _____

Organization:

Page

of

Environmental Programs Manual Reference	4.2 Environmental Policy																	
	4.3.1 Environmental Aspects																	
	4.3.2 Legal & Other Requirements																	
	4.3.3 Objectives & Targets																	
	4.3.4 Environmental Management Programs																	
	4.4.1 Structure & Responsibility																	
	4.4.2 Training Awareness & Competence																	
	4.4.3 Internal & External Communications																	
	4.4.4 EMS Documentation																	
	4.4.5 Document Control																	
	4.4.6 Operational Control																	
	4.4.7 Emergency Preparedness & Response																	
	4.5.1 Monitoring & Measure																	
	4.5.2 Non Conformance & Corrective & Preventative Actions																	
	4.5.3 Records																	
	4.5.4 EMS Audits																	
4.6 Management Review																		
BRANCH, LAB, PROJECT	Applicable Elements																	
	(Mark with an "X" and then shade or circle the elements to be added)																	
Notes:																		

Appendix C: Environmental Management System Audit Matrix and Checklist

NASA GRC Environmental Management System Audit Checklist 4.2 Environmental Policy		
	Date:	Page ____ of ____ for this Question
EMS Auditor:	Escort:	
Others in Attendance:		
Question: How is NASA GRC environmental policy implemented across the Center and communicated to all employees?		
Center Response:		
Description of Observation/Finding/Other Notes: <i>Can randomly selected employees explain what the policy means to them and do they know where to get a copy?</i> <i>Is there a plan ensuring that all levels of the organization are familiar with the policy?</i>		
Auditor Signature:		<input type="checkbox"/> Notes continued on other side Date:
NASA GRC Environmental Management System Audit Checklist 4.3.1 Environmental Aspects and Impacts		
	Date:	Page ____ of ____ for this Question
EMS Auditor:	Escort:	
Others in Attendance:		

Question:

How has the Center defined control and influence and followed the steps required to identify activities, products, services, focus areas, aspects, impacts, consequences, frequency, and risk ranking prescribed in paragraph 3.1 of the Agency EMSPM which result in completion of the risk matrix form?

How does the Center identify environmental risk in order to develop management strategies?

Center Response:**Description of Observation/Finding/Other Notes:**

R Review the Center management definition of control and influence to assess its comprehensiveness.

Review any Center specific processes **P** used to complete the risk matrix for. If the Center has documented these processes they are subject to controls.

R Both the risk matrix form and any recorded justification and background for risk rankings should be reviewed for completeness and for uses across NASA.

Ensure through interviews and documentation reviews that a comprehensive impact identification and classification process exists.

Ensure processes are in place to keep the risk matrix form up to date.

Auditor Signature:

☐ Notes continued on other side
Date:

NASA GRC Environmental Management System Audit Checklist
4.3.2 Legal and Other Requirements

Date:

Page ____ of ____ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

How does the Center ensure that the legal and other requirements directly applicable to the environmental impacts associated with its activities, products, and services have been identified, are integrated into Center programs and the implementation of NASA Policies, and are communicated to appropriate individuals? This includes providing access and tracking.

How are new or changed requirements incorporated into operating procedures?

Center Response:

Description of Observation/Finding/Other Notes:

P Examine the procedure(s) that the center uses to:

- Identify existing, new, and changes to legal and other requirements, using NASA-wide, Center-specific, and additional resources.
- Determine whom needs to know and how they are kept informed.
- Keep track of the requirements (document controls apply if Center has deemed procedures need to be documented in order to ensure they are followed)

Any interpretations generated on applicability of legal requirements, Center specific permits / agreements, or related training are records. **R** However, unless the Center deems it appropriate to maintain internal records of which legislation applies at different time periods then the actual laws and regulations are a matter of public record and need not be treated as EMS records.

Auditor Signature:

☐ Notes continued on other side
Date:

***NASA GRC Environmental Management System Audit Checklist
4.3.3 Objectives and Targets***

Date:

Page ____ of ____ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

What process does the Center use for setting objectives and targets?

What factors are considered in setting them?

How are they reviewed?

Center Response:

Description of Observation/Finding/Other Notes:

D Review Center objectives and targets, for high priority impacts and any other impacts for which the Center has decided objectives and targets are appropriate.

If objectives or targets were not set for high priority impacts based on technical feasibility or economic reasonability, review record. **R**

Determine how the Center has considered: legal and other, technology, operational, mission, financial, and stakeholder issues in setting objectives and targets. If a formal process was undertaken there may be records.

Get the Center to explain how it ensures objectives and targets align with the NASA environmental policy and continual improvement?

Staff should have a consistent answer regarding when and how objectives are reviewed and updated.

Auditor Signature:

☐ Notes continued on other side
Date:

NASA GRC Environmental Management System Audit Checklist
4.3.4 Environmental Management Programs

Date:

Page ___ of ___ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

Describe the Center's environmental management programs (EMPs) and supporting guides, procedures, etc. and how they address the objectives and targets.

How do the EMPs ensure NASA wide programs are addressed? Include environmental program initiatives such as NEPA related assessment activities.

Center Response:

Description of Observation/Finding/Other Notes:

Review the Center processes on how EMPs reflect the progression from:

- identification of new or modified activities, products, and services,
- identification of new or modified aspects and impacts, and their prioritization, and
- setting of objectives and targets. If established documented procedures for program development are present and deemed necessary by the Center then the procedures are subject to document controls.

Review the Center generated list of all EMPs **D** and selectively review EMPs with Center personnel.

Confirm that all high priority impacts are sufficiently covered.

Do EMPs include detail on who is responsible, resources, and timelines? Do these appear to be realistic and sufficient? Does the affected staff agree?

How do the programs highlight and address compliance requirements? Including NEPA and environmental justice where applicable, is it the exception or the norm that these requirements are followed?

Review program initiatives and have environmental staff detail how EMPs and their activities are included in all working areas of the Center (such as programs, design and construction).

Auditor Signature:

☐ Notes continued on other side

Date:

NASA GRC Environmental Management System Audit Checklist***4.4.1 Structure and Responsibility***

Date:

Page ____ of ____ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

At the Center, how are environmental management roles, responsibilities, and authorities defined, documented, and communicated for all appropriate organizational levels? Is there “**stop work**” authority within environmental responsibility?

Describe your environmental civil service staff and their assigned environmental programs.

How does Center management ensure adequate resources are provided for the EMS?

How does the environmental management teams or working group provide cross-organizational support?

Center Response:

Description of Observation/Finding/Other Notes:

Review documentation of roles and responsibilities (R and R) for the EMS. **D** Review these for key environmental staff, the EMS representative, and the EMS core team or equivalent.

When interviewed, do staff's impressions of their R and R align with those they have been assigned? How have their R and R been communicated to them? Specifically R and R with the EMS representative/ EMS core team or equivalent.

Does it appear that management ensures adequate resources have been provided for the EMS and its maintenance in accordance with the EMSPM?

- ⇒ issues/problems due to insufficient staff;
- ⇒ how you assess environmental staffing needs (i.e., excessive overtime, excessive use of contractors, compliance deficiencies);
- ⇒ degree of success in gaining approval for additional staff and why;
- ⇒ programs not being undertaken due to insufficient staff; and
- ⇒ issues regarding how contractor staff and "inherently governmental functions" are managed.
- ⇒ Resources/funding available for studies, research, and environmental maintenance activities

Is there a clear line of authority leading from top management to overall programs and to detailed program execution with accountability? Is there evidence that things actually work the way the roles and responsibility documentation say they do? Evidence could be records of communications or instructions, for example, of how resources for a new or changed program were developed.

Auditor Signature:

☐ Notes continued on other side
Date:

NASA GRC Environmental Management System Audit Checklist
4.4.2 Environmental Training Awareness and Competence

Date:

Page ____ of ____ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

Describe the process used to identify training needs of all personnel whose activities may result in consequences associated with high priority impacts or compliance activities

Describe the procedures for and content of employee awareness training.

How does the Center ensure personnel whose activities may result in consequences associated with priority environmental impacts or compliance activities are competent on the basis of appropriate education, training, and/ or experience?

Center Response:

Description of Observation/Finding/Other Notes:

Review Center procedures for identification of training needs, requirements for awareness training, and ensuring competence of staff whose activities are associated with high priority impacts. **P** What triggers recognition of a new training need (internal or external)?

The training procedures should ensure that needs once identified are correlated with appropriate training programs that are completed and whose effectiveness is monitored.

Are training and records **R** of training complete and up to date? Crosscheck selected records with interviewed staff.

How does the Center ensure that support organizations including on-site contractors are appropriately trained and aware?

Auditor Signature:

☐ Notes continued on other side
Date:

NASA GRC Environmental Management System Audit Checklist
4.4.3 Communications

Date:

Page ___ of ___ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

Describe existing communication procedures for communication with internal and external parties.

Center Response:

Description of Observation/Finding/Other Notes:

To assess the effectiveness of internal, communications review the quantity and nature of recent communications from management down and operational levels up as well across the organization. This should include the environmental office as well as EMS-related communications not driven by the environmental office.

Assess the effectiveness and access of internal communication from the environmental staff up the chain to senior management (Center Director/Deputy level).

Review recent communications between the Center and outside stakeholders including regulatory agencies.

*What procedure **P** exists for communicating the Center environmental impacts to external parties.*

*What communications procedures are used? **P** Determine if they are actually followed via review of records and interviews.*

Auditor Signature:

☐ Notes continued on other side
Date:

***NASA GRC Environmental Management System Audit Checklist
4.4.4 and 4.4.5 EMS Documentation and Document Control***

Date:

Page ____ of ____ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

Describe how plans and procedures are managed.

What process is in place to ensure that for all environmental handbooks, environmental management programs (EMPs), guidance materials, and standard operating procedures, these are complete and maintained? How are internal relationships among these documents tracked and understood?

Center Response:

Description of Observation/Finding/Other Notes:

The Center should have a formal process for the development, approval, and maintenance of procedures and documentation. P Review a subset of the EMS documents to determine if they are within a document control system and are the current versions located where they are needed. What evidence exists of steps being taken to ensure that only current and appropriate documents are used? Review disposition of obsolete documents.

Do users and authors (at Center-wide and operational control levels of the organization) understand how the document control system works and their roles?

Review documentation that explains how the core Center level EMS documents interact and provides direction to related EMS documentation. D

Auditor Signature:

☐ Notes continued on other side
Date:

***NASA GRC Environmental Management System Audit Checklist
4.4.6 Operational Control***

Date:

Page ____ of ____ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

Does the Center have documented procedures established and maintained to address situations where the absence of such procedures could lead to deviations from environmental policy, objectives, targets, and compliance activities?

Describe how these procedures stipulate specific operating and maintenance criteria.

What procedures are needed in relation to suppliers, contractors, and tenants and how are these requirements met?

Center Response:

Description of Observation/Finding/Other Notes:

Review the listing of operational control procedures supplied by the Center for completeness and consideration of how well the procedures function as part of the management of environmental impacts and consequences. **D** When examining the procedures look for actual operational and maintenance criteria.

Examine the process that the Center uses to decide what operational controls are required and how the adequacy of these controls is maintained. How proactive versus reactive is this process?

How are operational controls for suppliers and contractors developed and communicated (within Center Control and Influence limits) and are the controls actually part of how things get done? Where practical, interview selected contractors and suppliers.

Examine how well the Center understands if its tenancy agreements and any informal arrangements align with Center objectives and targets and the overall EMS.

Auditor Signature:

☐ Notes continued on other side
Date:

NASA GRC Environmental Management System Audit Checklist
4.4.7 Emergency Preparedness and Response

Date:

Page ____ of ____ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

Are procedures developed and maintained to prevent and mitigate environmental impacts associated with accidental releases?

How does the Center review and revise emergency response plan procedures after an incident to address deficiencies?

How frequently does the Center test its plan?

Center Response:

Description of Observation/Finding/Other Notes:

Review the emergency response plans and procedures. **P** Assess how comprehensive the scope of potential releases considered in the development of the plans is relative to the list of impacts in the EMS risk matrix form.

Examine any revisions to the plans, as a result of tabletop reviews **R**, actual incidents, or new internal or external information.

How actively does the center pursue opportunities to improve in this area? Examine the Center's annual review of emergency preparedness procedures.

Auditor Signature:

☐ Notes continued on other side
Date:

NASA GRC Environmental Management System Audit Checklist
4.5.1 Monitoring and Measurement

Date:

Page ___ of ___ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

Describe the system used and documented procedures to inspect, test, monitor, track, and measure key characteristics of operations associated with EMS objectives and targets and high priority impacts.

Describe processes for calibration of monitoring equipment.

Center Response:

Description of Observation/Finding/Other Notes:

Review monitoring and measurement plans and procedures. **D**

Was a comprehensive process undertaken to identify characteristics of operations that need monitoring or measuring? This should include contractors, tenants, and any areas where operational controls have been identified as needed.

Review records **R** on progress towards meeting objectives and targets or maintenance of performance in already managed areas.

Review record **R** keeping and sample records to see if monitoring is being conducted in accordance with procedures.

Do calibration processes and records for EMS related equipment exist? **D** and **R** Note: ISO 9000 models for calibration are one possible method to follow.

How is periodic trend analysis of corrective and preventive actions accomplished? What trends were found (if any)?

Auditor Signature:

☐ Notes continued on other side
Date:

***NASA GRC Environmental Management System Audit Checklist
4.5.2 Nonconformance, Corrective and Preventive Action***

Date:

Page ____ of ____ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

Describe Center procedures for nonconformance and corrective /preventive action.

How does the Center ensure that corrective or preventive actions are appropriate to the environmental impact?

What tracking and record keeping is done in association with these processes?

How are these processes connected with auditing and management review processes?

Center Response:

Description of Observation/Finding/Other Notes:

Review the corrective and preventative action procedures. **P** These should include actions from Center, HQ, and external parties resulting from monitoring and measuring programs, periodic reviews/audits of the EMS, and management reviews.

Review how corrective action requirements are identified. In interviews are staff typically aware of the corrective and preventive action process and how it is an integral part of continuous improvement?

Determine if proactive preventive steps are in place that look: internally and externally beyond the Center and NASA.

Are actions tracked to completion and feedback provided on progress towards resolution? Follow a couple of actions from identification of an issue, through any root cause analysis, determination of course of action, assignment of responsibility, authority and resources, through to completion. This should be recorded in changes in documented procedures. **R**

How is periodic trend analysis of corrective and preventive actions accomplished? What trends were found (if any)?

Auditor Signature:

☐ Notes continued on other side
Date:

NASA GRC Environmental Management System Audit Checklist
4.5.3 Records

Date:

Page ___ of ___ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

What record types and record keeping systems are in use? How does the Center ensure they are all properly controlled?

How are records maintained so that they can be traced to an activity, product, or service?

Center Response:

Description of Observation/Finding/Other Notes:

Review selected EMS records in different record keeping systems and look for consistencies in approach and controls as an indicator of maturity of systems. Auditable records are:

1. *Priority Impact Risk Matrix.*
2. *EMS Training Records.*
3. *Compliance activity records in accordance with Legal and Other requirements.*
4. *Calibration and maintenance records.*
5. *Management review results.*
6. *Results of test of emergency response procedures.*
7. *Decision with regard to external communication of High Priority Impacts.*
8. *Changes in the documented procedures resulting from corrective and preventive action.*
9. *Any additional records listed in the Center's records retention matrix or Center EMS procedures*

Review records maintained by NASA staff as well as contractors.

What steps taken to allow records to be traced to the specific activity, product, or service? Crosscheck a few records to confirm that records can be traced.

Auditor Signature:

☐ Notes continued on other side
Date:

NASA GRC Environmental Management System Audit Checklist
4.5.4 EMS Audit

Date:

Page ____ of ____ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

Describe Center internal audit systems.

Outline documented Center programs and procedures for review of compliance with environmental legislation and regulations.

Describe the Center's processes for acting upon the results of compliance reviews, HQ Environmental Functional Reviews, and external audits.

Center Response:

Description of Observation/Finding/Other Notes:

Review recent Center internal EMS audit and review audit results. **R** Was a planned audit or assessment procedure **P** used and followed? How were results integrated into the Corrective/Preventive Action system?

How did the audit assess conformance with the commitments required by the EMSPM and by the Center's EMS documentation and procedures? (For example: did selected elements of the management system get reviewed or were all elements reviewed?) Does the procedure increase audit frequency in problem areas?

How did the results get conveyed to management?

Examine the compliance review process. Does it look at areas where a non-compliance may not exist at present but could, and does the review include recommendations for improved performance.

Are trends in EMS non-conformances or regulatory non-compliance identified for further examination?

How are findings from internal, HQ, and external audits and reviews integrated into the preventive and corrective action system?

Auditor Signature:

☐ Notes continued on other side
Date:

NASA GRC Environmental Management System Audit Checklist
4.6 Management Review

Date:

Page ____ of ____ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

Describe the mechanism used for Center level management to review and act upon reviews, audits, assessments, and other information deemed appropriate by management, in determining whether environmental policy, objectives, targets, or other EMS component changes are required.

Describe communications processes and roles related to management reviews.

Center Response:

Description of Observation/Finding/Other Notes:

In order to understand what information senior management is provided for making decisions follow the process of preparation of EMS information for Center-level management review.

*Documentation of the review **R** and how changes in Center-level EMS elements are directed by management should be examined to see that that top Center management is involved in the review.*

Check that a follow up process occurs.

Auditor Signature:

☐ Notes continued on other side
Date:

NASA GRC Environmental Management System Audit Checklist***4.6 Metrics***

Date:

Page ___ of ___ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

What metrics does the Center utilize in its EMS reviews? Are they workload, performance, or data metrics?

What EMS changes have been instituted based on the review of metrics?

Center Response:

Description of Observation/Finding/Other Notes:

How useful is the information the metrics provide? Do the metrics need to be normalized?

Is the behavior that each metric encourages understood by the Center and is it desirable?

Auditor Signature:

☐ Notes continued on other side

Date:

***NASA HQ Environmental Functional Review Auditor Checklist
Additional***

Date:

Page ____ of ____ for this Question

EMS Auditor:

Escort:

Others in Attendance:

Question:

Center Response:

Description of Observation/Finding/Other Notes:

Auditor Signature:

☐ Notes continued on other side
Date: